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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HYUN-SOOK JUNG, JAE-PHIL CHO, and GEUN-BAE KIM

Appeal 2011-003008
Application 09/775,315
Technology Center 1700

Before HUBERT C. LORIN, CATHERINE Q. TIMM, and KAREN M.
HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134 of the Examiner's final decision rejecting claims 1-4 and 11. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

Claims 1 and 11 are illustrative of the claimed subject matter:

1. A positive active material for a rechargeable lithium battery comprising:

lithium nickel manganese oxides; and
lithium manganese oxides,

wherein a weight ratio of lithium manganese oxides to the lithium nickel manganese oxides ranges from about 4:6 to about 1 :9, providing an excess of lithium nickel manganese oxides.

11. A rechargeable lithium battery comprising:

a positive electrode comprising:

a positive active material comprising a mixture of lithium nickel
cobalt oxides and

lithium manganese oxides, the weight ratio of the lithium manganese oxides to the lithium nickel cobalt oxides being less than 1: 1, wherein the lithium manganese oxides and the lithium nickel cobalt oxides remain distinct chemical species and are bonded together by a first binder adapted to be evaporated,

a second binder; and

a conductive agent;

a negative electrode; and

an electrolyte.

The Examiner maintains, and the Appellants appeal, the following rejections under 35 U.S.C. § 103(a):

1) claims 1-4 as unpatentable over Pynenburg (U.S. Patent 5,429,890; issued Jul. 4, 1995) in combination with Hasegawa (U.S. Patent 5,370,948; issued Dec. 6, 1994) , with evidence by Imachi (U. S. Patent 7,056,622 B2; issued Jun. 6, 2006);

2) claim 11 as unpatentable over Mayer (U.S. Patent 5,783,333; issued Jul. 21, 1998).

PRINCIPLES OF LAW

“On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the prima facie case with evidence of secondary indicia of nonobviousness.” *In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (emphasis omitted).

It is well established that where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 267 (CCPA 1976).

ANALYSIS

After thorough review of the respective positions provided by Appellants and the Examiner, we AFFIRM both of the § 103(a) rejections on appeal for essentially the reasons presented by the Examiner, including the Response to Argument section (Ans., mailed Jul. 28, 2010). We add the following primarily for emphasis.

Claims 1-4

With respect to the rejection of claim 1-4, Appellants' contention that Imachi may not be relied upon because its effective date is after the priority date of the present case (App. Br. 4) is unavailing. As pointed out by the Examiner, Imachi is properly used as extrinsic evidence of the higher discharge capacity *property* of lithium nickel manganese oxide compared to lithium manganese oxide (Ans. 6, 9). Appellants do not dispute this finding of the Examiner (*generally* App. Br.; Reply Br., filed Sept. 27, 2010). Appellants also do not otherwise dispute that Examiner has established a *prima facie* case of obviousness as to claims 1-4 (App. Br. 4). As such, where the Examiner establishes a reasonable basis to conclude that the claimed invention would have been obvious, as here, the burden shifts to the Appellants to rebut the *prima facie* case by providing evidence of unexpected results, based on comparisons with the closest prior art and commensurate in scope with the claimed subject matter, or a showing that the prior art teaches away from the claimed invention in any material respect. *See, e.g., In re Kulling*, 897 F. 2d 1147, 1149 (Fed. Cir. 1990); *See also, In re Geisler*, 116 F.3d 1465, 1469-70 (Fed. Cir. 1997).

Appellants do not argue that the prior art teaches away from the claimed invention; rather, Appellants only contend that the claimed mixture of oxides in the claimed range of ratios achieve "unexpected results" (App. Br. 4). To demonstrate unexpected results, Appellants primarily rely upon the Kim Declaration, filed March 28, 2007, to show that the recited ratios of the claimed oxide mixtures have better properties compared to those outside the claimed range (App. Br. 4, 5). Appellants also rely upon the

Specification to illustrate “superior” properties of the claimed oxide mixtures (Spec. 16; App. Br. 4, Table 2, Spec. 13-17).

However, the results in Table 2 are not a comparison of the claimed ranges with ranges outside the ranges, as the comparative examples comprise mixtures of different oxides in the same ratios as the inventive examples. The Specification also does not establish that these results are “unexpected”; rather, the Specification merely states that “results [from Table 2] indicate that the cells [of the invention] will have superior thermal stability” to those of the comparative oxide mixtures (e.g., Spec. 16:1-9). *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1371 (Fed. Cir. 2007) (“any superior property must be *unexpected* to be considered as evidence of non-obviousness.”). Furthermore, a preponderance of the evidence supports the Examiner’s determination that Appellants’ showing in the Kim Declaration is not commensurate in scope with the claimed range (Ans. 9). *See In re Peterson*, 315 F.3d 1325, 1330-31 (Fed. Cir. 2003) (in order to successfully rebut a prima facie case of obviousness, a showing of unexpected results must be commensurate in scope with the claims); *also, In re Greenfield*, 571 F.2d 1185, 1189 (CCPA 1978) (“Establishing that one (or a small number of) species gives unexpected results is inadequate proof, for ‘it is the view of this court that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.’ *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)”).

In addition, we emphasize that, although secondary considerations such as unexpected results must be taken into account, they do not necessarily control the obviousness conclusion. *See Sud-Chemie, Inc. v. Multisorb Technologies, Inc.*, 554 F.3d 1001, 1009 (Fed. Cir. 2009)

(“[E]vidence of unexpected results and other secondary considerations will not necessarily overcome a strong prima facie showing of obviousness”); *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d at 1372 (“[T]his secondary consideration does not overcome the strong showing of obviousness in this case. Although secondary considerations must be taken into account, they do not necessarily control the obviousness conclusion.”); *see also Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 769 (Fed. Cir. 1988).

Here, as pointed out by the Examiner, the case of obviousness established by the applied prior art is strong in view of Pynenburg’s teaching “that the cell capacity is proportional to the area under the curve of the differential cell capacity . . . vs. voltage” (Ans. 10) relating to a reasonable expectation of optimizing an improvement from blending two oxides that Appellants’ alleged superior results are ultimately insufficient. On the record of this appeal, Appellants have not persuasively shown unexpected results, and Appellants have not shown unexpected results which are commensurate in scope with claim 1.

Appellants do not provide any separate argument directed to dependent claims 2-4 (App. Br. 4, 5); hence, these claims are affirmed for the same reasons discussed regarding the rejection of independent claim 1.

Appellants have not shown reversible error in the Examiner’s obviousness rejection of claims 1-4, nor have Appellants overcome the rejection by rebutting the prima facie case with sufficient evidence of unexpected results.

Accordingly, we affirm the § 103 rejection of claims 1-4 on appeal.

Claim 11

Notably, claim 11 is directed to a product. The limitation “are bonded together by a first binder adapted to be evaporated” is a process limitation directed to how the product was made. It has been well established that, when a product recited in product-by-process format reasonably appears to be the same as or obvious from a product of the prior art, the burden is on applicant to show that the prior art product is in fact different from the claimed product, even though the products may be made by different processes. *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985).

Appellants’ main contention that the limitation that the oxides are “bonded together by a first binder adapted to be evaporated” means that some binder must remain (App. Br. 3; Reply Br. 1, 2) is unavailing. “[T]he PTO must give claims their broadest reasonable construction consistent with the specification . . . Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.” *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). “[A]s applicants may amend claims to narrow their scope, a broad construction during prosecution creates no unfairness to the applicant or patentee.” *Id.* As explained by the Examiner, the binder is “to be evaporated” as set out in the claim, and the Specification includes the possibility that in the final product no binder remains (*e.g.*, Ans. 8, 9, 11). Appellants have provided no persuasive rationale or credible evidence that the broadest reasonable interpretation in light of the Specification of this limitation does not encompass a final product with no binder being present after evaporation.

Appellants further argue that even though, as pointed out by Examiner, Mayer teaches certain oxide materials may remain distinct chemical species in the electrode mixtures (*e.g.*, Ans. 11, 12) as claimed herein, the LiNO₂ synthesis example of Mayer relied upon by the Examiner (to exemplify water used as a binder) does not teach that the lithium manganese oxides and lithium nickel cobalt oxides remain distinct chemical species as required by the claim (*e.g.*, Reply Br. 3). This argument is also unavailing.

As pointed out by the Examiner, Mayer teaches that a positive electrode may comprise mixtures of lithium nickel cobalt oxides and lithium manganese oxides that remain chemically distinct, and optimizing the relative amounts of each oxide would have been within the ordinary skill in the art (Ans. 4; Mayer *e.g.*, col. 10, ll. 48-67; col. 8, ll. 42-50). The use of such a mixture appears to be no more than the predictable use of prior art elements according to their established functions. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). (“[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”.)

Appellants have provided no persuasive rationale or credible evidence that the claimed battery comprising a positive electrode mixture as recited in of claim 11 is patentably distinct over the battery of Mayer comprising a positive electrode that may, through the use of no more than ordinary creativity, comprise a mixture of lithium nickel cobalt oxides and lithium manganese oxides mixtures in the claimed weight ratio as explained by the Examiner.

ORDER

We affirm the Examiner's decision to reject all of the pending claims.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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